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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,510

06/09/2005

Hiroyoshi Matsumura

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EXAMINER

RAHLL, JERRY T

ART UNIT

PAPER NUMBER

2874

MAIL DATE

DELIVERY MODE

06/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s) <i>JH</i>	
	10/538,510	MATSUMURA, ET AL.	
	Examiner	Art Unit	
	Jerry T. Rahl	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12, 13 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12, 13 and 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 21, 2007 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 12-13 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,594,419 to Ukrainczyk.

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5. Regarding independent Claim 12, Ukrainczyk describes an optical fiber (30) and at least one GRIN lens (28) fusion spliced to an end of the optical fiber, where the GRIN lens has an exposed end and the tip of the exposed end is flat (see Figures 2A and 2B). The Examiner notes that the ends of the GRIN lens described by Ukrainczyk are exposed to the fiber (30) and second lens (32). While Ukrainczyk does not specifically describe the numerical aperture of the GRIN lens as larger than that of a light emitting sources, light sources with very small apertures (less than that of a GRIN lens as described by Ukrainczyk) are well-known in the art. At the time of the invention, it would have been obvious to one of ordinary skill in the art to use such a small numerical aperture light emitting source with the fiber structure of Ukrainczyk. The motivation for doing so would have been to transmit an optical signal to a system including the fiber.

Further, Ukrainczyk does not describe the numerical aperture of the GRIN lens as 0.43.

However, it would have been obvious to one of ordinary skill in the art at the time of invention to use such a combination, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). The motivation for doing so would have been to ensure transmission of an optical signal into the fiber of Ukrainczyk.

6. Regarding Claim 13, Ukrainczyk does not describe the GRIN lens having a coefficient of thermal expansion as $15 \times 10^{-7} \text{K}^{-1}$ or less. However many materials used for lenses have such thermal qualities. It would have been obvious to one of ordinary skill in the art at the time of invention to use such a low coefficient of thermal expansion material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its

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suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ

416. The motivation for doing so would have been to ensure a good fusion joint.

7. Regarding independent Claim 17, Ukrainczyk describes an optical fiber (30), a first GRIN lens (28) and a second GRIN lens, spliced to the fiber and the first lens (see Figures 2A and 2B). The Examiner notes that the ends of the GRIN lenses described by Ukrainczyk are exposed to other optical components, as shown in Figures 2A and 2B. Ukrainczyk does not specifically describe the numerical aperture of the first lens as larger than the numerical aperture of the second GRIN lens. At the time of invention, it would have been obvious to one of ordinary skill in the art to use lenses have numerical apertures in such a relation, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum workable range involves only routine skill in the art. In re Aller, 105 USPQ 233. The motivation for doing so would have been to ensure transmission of an optical signal into the fiber of Ukrainczyk. Further, Ukrainczyk does not specifically describe the numerical apertures of the first lenses, fiber and light source having the relationship presently claimed. At the time of invention, it would have been obvious to one of ordinary skill in the art to use lenses have numerical apertures in such a relation, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum workable range involves only routine skill in the art. In re Aller, 105 USPQ 233. The motivation for doing so would have been to ensure transmission of an optical signal into the fiber of Ukrainczyk.

8. Regarding Claim 18, Ukrainczyk does not describe the numerical aperture of the GRIN lens as 0.43. However, it would have been obvious to one of ordinary skill in the art at the time of invention to use such a combination, since it has been held that discovering an optimum value

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of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). The motivation for doing so would have been to ensure transmission of an optical signal into the fiber of Ukrainczyk.

9. Regarding Claim 19, Ukrainczyk does not specifically describe the dimensional qualities of the first GRIN lens having the relation presently claimed. At the time of invention, it would have been obvious to one of ordinary skill in the art to use lenses have numerical apertures in such a relation, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum workable range involves only routine skill in the art. In re Aller, 105 USPQ 233. The motivation for doing so would have been to ensure transmission of an optical signal into the fiber of Ukrainczyk.

10. Regarding Claim 20, Ukrainczyk does not describe the GRIN lens having a coefficient of thermal expansion as $15 \times 10^{-7} \text{K}^{-1}$ or less. However many materials used for lenses have such thermal qualities. It would have been obvious to one of ordinary skill in the art at the time of invention to use such a low coefficient of thermal expansion material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. The motivation for doing so would have been to ensure a good fusion joint.

Response to Arguments

11. Applicant's arguments filed March 21, 2007 have been fully considered but they are not persuasive.

12. Applicant argues that Ukrainczyk does not describe an exposed tip part of an exposed end of a GRIN lens that is flat. The examiner notes that "exposed" is a broad term and that a tip of a

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GRIN lens attached to another optical component is exposed to that component. Therefore the GRIN lenses shown in Figures 2A and 2B of Ukrainczyk have flat, exposed tips.

13. Applicant argues that it would not have been obvious to one of ordinary skill in the art combine a small NA light source with the fiber structure of Ukrainczyk because small NA light source is not suitable for optical communication. While the examiner agrees that this is the case for semiconductor lasers as discussed by Applicant, other small NA light sources (such as end-fire fibers) are commonly used in optical communications. At the time of the invention, it would have been obvious to one of ordinary skill in the art to use such a small numerical aperture light emitting source with the fiber structure of Ukrainczyk. The motivation for doing so would have been to transmit an optical signal to a system including the fiber structure of Ukrainczyk.

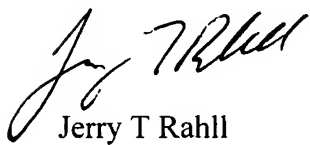
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry T. Rahll whose telephone number is (571) 272-2356. The examiner can normally be reached on M-F (9:00-5:00).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jerry T Rahll



MICHELLE CONNELLY-CUSHWA
PRIMARY EXAMINER
6/11/07